

U.S.S.N. 09/121,152

Filed: July 22, 1998

AMENDMENT AND RESPONSE TO OFFICE ACTION**Remarks****Amendments to the Claims**

Claims 25 and 30 have been amended to correct the dependency.

Claims 28 and 38 have been amended to correct grammatical errors.

Claim 36 has been amended to correct a typographical error.

Claim 41 has been canceled. Claim 41 was objected to under 37 C.F.R. § 1.75 as being a substantial duplicate of claim 21.

Claim 49 has been amended to define the method of claim 21 wherein the wastepaper is disintegrated in a conventional pulper. Support for the amendment is found, for example, on page 6, lines 1-2.

Claim 50 has been amended to define the method of claim 49 wherein the consistency of the pulp in the conventional pulper is between 4 and 7%. Support for the amendment is found, for example, on page 6, lines 1-2.

Priority

The applicants and undersigned thank the Examiner for acknowledging the priority date of May 16, 1989 for claims 21-25, 27-28, 30-31, 33-34, 36-38, 40-47 and new claims 49-50 and the priority date of May 6, 1994 for claims 26, 32, and 35.

Claim 48 has been amended to refer to an acid resistant enzyme. Specific support is found on page 6, last paragraph.

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AMENDMENT AND RESPONSE TO OFFICE ACTION**Information Disclosure Statement**

The examiner noted that the information disclosure statement (IDS) filed October 19, 1998 was not considered because it failed to comply with 37 C.F.R. § 1.98(a)(3) since it did not include a concise explanation or of the relevance of JP 52-20563, which was provided in Japanese. Applicants respectfully draw the examiners attention to the MPEP 609.05 (a) which states "if an item of information in an IDS fails to comply with all the requirements of 37 CFR 1.97 and 37 CFR 1.98, that item of information in the IDS will not be considered and a line should be drawn through the citation to show that it has not been considered. However, other items of information that do comply with all the requirements of 37 CFR 1.97 and 37 CFR 1.98 will be considered by the examiner". Furthermore, JP 52-20563 was submitted to the Patent Office in Application Serial No. 08/239,313 now U.S. Patent No. 5,785,809, filed May 6, 1994, to which the present application claims priority. Pursuant to 37 C.F.R. §1.98(d), Applicants are not required to enclose copies of this publications. Applicants respectfully request that the examiner consider all the references cited in the IDS filed October 19, 1998.

Rejection Under 35 U.S.C. § 112, first paragraph

Claims 27, 28, 37, and 48 were rejected under 35 U.S.C. § 112, first paragraph, failing to comply with the written description requirement. Applicants respectfully traverse this rejection to the extent that it is applied to the claims as amended.

The Examiner alleges that the phrase "alkali is not added to the aqueous medium" in claims 27 and 37 is not disclosed in the specification. The Examiner is directed to Examples 1-3,

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which describe the deinking of wastepaper using cellulolytic and pectinolytic enzymes. The wastepaper is deinked without the addition of alkali such as sodium hydroxide (pages 8-13). The phrase "alkali is not added to the aqueous medium" clearly has support in the specification.

The Examiner alleges that the limitation "12% or greater" exceeds the range disclosed in the specification. The standard for whether a claim complies with the written description requirement is whether the applicant conveyed, with reasonable clarity, to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177,179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)).

The applicant discloses that the claimed method can be used in a conventional pulper or a high consistency pulper (page 6, lines 1-3). The values 2-15% are in parentheses and represent the ranges which can be achieved with a laboratory pulper. One of ordinary skill in the art would recognize that higher pulping consistencies can be achieved with a mill-sized pulper. The enclosed excerpt from the industry textbook *Pulp and Paper Chemistry and Chemical Technologies*, which was published in 1980, well before the applicants' priority date, discloses

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that high consistency pulpers encompass pulp consistencies from 6% to 35% (page 583, first full paragraph, first three lines).

The Examiner alleges that the phrase "common wastepaper pulping consistency" is not disclosed in the specification. Claim 49 has been amended to define the method of claim 1 wherein the wastepaper is disintegrated in a conventional pulper (page 6, lines 1-3). Claim 50 has been amended to define the method of claim 49 wherein the consistency of the pulp in a conventional pulper is between 4 and 7% (page 6, lines 1-3).

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 25, 30, and 49 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants respectfully traverse this rejection to the extent that it is applied to the claims as amended.

Claims 25 and 30 have been amended to depend from claim 21, as suggested by the Examiner.

The Examiner alleges that the term "common" in claim 49 is indefinite. Claim 49 has been amended to define the method of claim 1 wherein the wastepaper is disintegrated in a conventional pulper. Claim 50 has been amended to define the method of claim 49 wherein the consistency of the pulp in a conventional pulper is between 4 and 7%. Support for the amendment is found, for example, on page 6, lines 1-2.

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Rejection Under 35 U.S.C. § 103

Claims 21-27, 30, 41, 45, and 47-50 were rejected under 35 U.S.C. § 103(a) as obvious over Japanese Application 59-9299 (JP '299) in view of U.S. Patent No. 4,923,565 to Fuentes *et al.* ("Fuentes"). Claims 28, 31-38, 40, 42-44, and 46 were rejected under 35 U.S.C. § 103 (a) as obvious over Japanese Application 59-9299 (JP '299) in view of U.S. Patent No. 4,923,565 to Fuentes *et al.* ("Fuentes"), further in view of U.S. Patent No. 4,548,674 to Hageman *et al.* ("Hageman"). Applicants respectfully traverse this rejection.

Claims 21-27, 30, 41, 45, and 47-50**a. Japanese Application 59-9299 ("JP '299")**

The '299 patent describes a de-inking agent that can be used for recycling of old paper such as newspapers and magazines. The de-inking agent contains a cellulase (page 2, 4th paragraph). Cellulases are commonly found in animals, plants, bacteria, and fungi. The '299 patent states that alkaline cellulases are especially preferred. The '299 patent defines an alkaline cellulase as one having an optimum activity between pH 8.0 and 11.5. There is a statement that "Such enzymes retain their activity in the alkaline region as well as the acid and neutral range" (bottom of page 2 to top of page 3). The Examiner has alleged that since the enzyme can be active in acidic and neutral pH, it would have been obvious to use the cellulase over its entire range of activity, e.g. at acidic and neutral pH. The examiner's reasoning is in error since the claimed pH range is the pH of the pulp; the prior art comment relates to the pH at which the enzyme is active. The statement merely implies that one can use an enzyme with broad pH

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specificity or more preferably one with a pH optimum between 8-11; there is nothing with respect to the pH of the pulp to which the enzyme is added.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious to one of ordinary skill in the art at the time of the invention. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Examples 1-3 of the '299 patent all disclose the use of NaOH during the disintegration step. This would yield an alkaline pH (i.e., greater than pH 8.0).

In response to the examiner's concerns that the declaration of Howard Kaplan, which was originally submitted with the amendment and response filed on November 22, 2004, was insufficient to overcome the rejection of the claims in view of JP '299, a new declaration is enclosed with this response. The declaration provides the pH analysis, and results, for ten samples, establishing that the results are statistically significant. The Declaration of Howard Kaplan shows that the difference in the whiteness of the resulting pulp between the method described in JP '299 and the claimed method is approximately 2.2%, based on comparing the

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method of the Japanese application with the claimed method ten times. This difference is highly significant, particularly in light of the costs associated with the use of caustic soda at the time applicants filed their application (see the enclosed abstract regarding the cost of caustic soda from 1988-1991). These differences in cost are in excess of \$1 million/year.

The Japanese Patent Office (JPO), in its Decision of Opposition to Patent (a registered copy of which was enclosed with the response filed on November 22, 2004, Exhibit B), found that there was no disclosure or suggestion of "pulping after controlling the pH in the range of 3 to 8, a part of the construction of the present invention.... Thus the present invention cannot be constructed to be easily inventable by a person having ordinary skill in the art from the description of the '299 patent."

In summary:

The '299 patent does not disclose deinking at a pH between 3 and 8. The '299 patent discloses deinking using an enzyme that has activity over a range of 3 to 11, preferably 8.1-11.

The Japanese Patent Office Opposition Board found that the '299 patent did not disclose deinking of paper pulp with an enzyme at a pH of 3 to 8.

The comparative data shows that the claimed method produces statistically significantly better results, with huge costs savings, as compared to the method of the Japanese application.

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b. U.S. Patent No. 4,923,565 to Fuentes ("Fuentes")

Fuentes describes an enzyme preparation containing cellulases and/or hemicellulases, which is reacted on a papermaking pulp with an SR at least equal to 25, measured on a pulp in a homogeneous suspension at 2g/l under the conditions of standard NFQ 003 (column 2, lines 39-43). Preferred enzymes include those which possess a C_1 activity, a C_x activity, and a xylanase activity (column 2, lines 57-60). Fuentes does not disclose or suggest a method of **de-inking waste printed paper**, comprising pulping at a pH between 3 and 8 waste printed paper with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between 3 and 8, wherein ink is dislodged from the waste printed paper by action of the enzyme.

c. The References in Combination

None of the prior art discloses nor leads one of ordinary skill in the art to the claimed methods. One can only arrive at the claimed composition using hindsight reconstruction. The art does not disclose the claimed elements as well as the motivation to combine as applicants have done, with a reasonable expectation of success for the intended purpose, much less the rather surprising results that are actually obtained. Those skilled in the art believed that one could only deink at an alkaline pH at the time this application was originally filed. The applicants have clearly shown that there was no suggestion in the prior art of **enzymatic deinking** at a pH of 3 to 8 – i.e., at an acid or neutral pH, nor a reasonable expectation. Therefore, claims 21-27, 30, 41, 45, and 47-50, are not obvious over JP '299 in view of Fuentes.

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AMENDMENT AND RESPONSE TO OFFICE ACTION**Claims 28, 31-38, 40, 42-44, and 46****a. JP '299 and Fuentes**

As discussed above, JP '299 and Fuentes, alone or in combination, do not disclose or suggest a method of de-inking waste printed paper, comprising (a) pulping at a pH between 3 and 8 waste printed paper with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between 3 and 8, wherein ink is dislodged from the waste printed paper by action of the enzyme; and (b) removing the dislodged ink particles from the resulting pulp containing medium.

b. U.S. Patent No. 4,548,674 to Hageman et al. ("Hageman")

Hageman describes a process for the regeneration of waste paper containing polymer contaminants, wherein the wastepaper is pulped in the presence of an acidic aqueous solution containing at least one peroxide compound. Hageman does not disclose or suggest the enzymatic **deinking** of waste printed paper. In fact, Hageman does not disclose or suggest the use of enzymes.

c. The References In Combination

None of the prior art discloses nor leads one of ordinary skill in the art to the claimed methods. One can only arrive at the claimed composition using hindsight reconstruction. The art does not disclose the claimed elements as well as the motivation to combine as applicants have done, with a reasonable expectation of success for the intended purpose. Those skilled in the art believed that one could only deink at an alkaline pH at the time this application was

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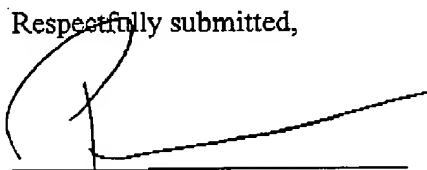
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originally filed. Accordingly, the applicants have clearly shown that there was no suggestion in the prior art of **enzymatic deinking** at a pH of 3 to 8 – i.e., at an acid or neutral pH. Therefore, claims 28, 31-38, 40, 42-44, and 46, are not obvious over JP '299 in view of Fuentes, further in view of Hageman.

Allowance of claims 21-28, 30-38, 40 and 42-50 is respectfully solicited.

Respectfully submitted,



Patrea L. Pabst
Reg. No. 31,284

Date: February 16, 2006

PABST PATENT GROUP LLP
400 Colony Square, Suite 1200
1201 Peachtree Street
Atlanta, Georgia 30361
(404) 879-2151
(404) 879-2160 (Facsimile)